# Investment in Fibre in the UK: The Need for Change

Prepared on behalf of Vodafone by Dr Richard Carter

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## 1. Introduction

The Department for Digital, Culture, Media and Sport (DCMS) has highlighted that the UK is lagging behind other countries in the deployment of fibre into homes and business premises (FTTH/P). This puts the UK at a competitive disadvantage to other countries that have moved faster in deploying fibre, not least in the context of the exit of the UK from the European Union in the near future.

In this paper we consider the following issues:

- Why has there been such limited investment in fibre so far in the UK?
- What can be done to remedy this situation?
- How might this translate into a new regulatory model, which has a clear target of achieving complete fibre coverage[1] throughout the UK?

The paper is informed by Vodafone's experience as an investor in fibre networks in a number of other European countries and as a prospective investor and anchor tenant in the UK.

## 2. The Fibre Investment Environment in the UK

Why have we not had significant investment in the UK? This is undoubtedly a very complex issue and in this section we bring together a number of arguments to suggest why the environment has not been conducive to investment either by BT or by operators entering the market to deploy new fibre networks.

Although there is no single explanation, there is one factor that is particularly striking and that is BT's continuing ability to determine the future trajectory of the telecoms market. The concept of systems control has been recognised in other regulated

[1] It should be noted that in practice a very small proportion of properties may need to be supplied with an alternative technological solution, but the objective in these cases would still be to achieve speeds that approximate a fibre level capability.

sectors, notably energy and railways, and, as will be discussed in more detail later in the paper, it can help illuminate the problems in the telecoms sector. It is true that BT faces competition in many of the markets in which it operates, but the reality is that it continues to operate across the whole sector, including pay television and mobile, and exert significant control over traditional telephony and broadband services. It is in the unique position of being able both to make the crucial technology decisions, for example favouring fibre to the cabinet (FTTC)[2] over full FTTH/P deployment, as well as being able to control the terms of retail competition through the way in which it develops its wholesale products and, in the absence of regulatory intervention, the terms and conditions that it is able to impose on the operators that have no choice but to contract with it.

It is clear that there are high barriers to entry for firms deploying a fibre network and that the regulation imposed in the past has not been sufficient to address this issue. Indeed, arguably regulations that have been imposed on BT under the SMP framework have actually exacerbated the situation both in terms of the incentives and the impact this has had on potential new investors in fibre. We discuss these issues in more detail below.

### 2.1 BT's system control and the impact on the communications market

As highlighted above the concept of system control and the System Operator (SO) has proved useful in other network industries and we believe it can be applied to BT to understand the lack of progress in fibre deployment in the UK to date. In electricity, for example, it is very clear that one entity has system control (National Grid), whereas the telecoms market is more fragmented, with competition at some levels of the value chain and in some specific geographical areas. Nevertheless, BT still operates the only national network and has a significant presence in all of the retail markets, and, for legacy reasons, it is also an essential trading partner for all operators as the

[2] Whenever reference is made to FTTC it should also be taken to include any further upgrades such as G.fast. The crucial point is that these are incremental technology developments that continue to exploit the existing copper assets.

provider/facilitator of such services as number portability, emergency call handling and text relay.

In its 2017 consultation Ofgem highlighted the key roles of the SO in the electricity sector and, notwithstanding the significant differences between electricity and telecoms systems, many of the issues highlighted by Ofgem seem pertinent in the case of BT and the telecoms sector[3]. For example, BT has been largely in control of technology innovation, it has assumed responsibility for driving competition (or more accurately for constraining the terms of competition through its design of the technology platform) and efficiency across the system and has also been responsible for overseeing the system as a whole. Further to this BT is in the unique position that it knows that it can propose a particular investment strategy (for example to invest in FTTC) safe in the knowledge that should a new entrant propose an alternative approach (for example FTTH/P) it is able to react from a position of strength, thus undermining the potential for effective competitive entry. To be clear, however, we are not arguing that BT should have these roles but rather that it has assumed them to a significant extent largely by default. As the prominent academic commentator, Dieter Helm, has explained: "The System Operator is where public interest and typically national decisions get made"[4]. This is an absolutely crucial point, as it is clear that BT has been acting, quite correctly, in the private interests of its shareholders rather than the public interest.

We can examine the SO role of BT with regard to the three elements highlighted above. Has BT really been able to control innovation across the system? To a significant extent it has. It made the decision to deploy FTTC rather than FTTH/P and this had major implications for the potential deployment of FTTH/P by any other operator (as will be outlined in more detail later in this paper). Given that the Department for DCMS is consulting on how to move to full fibre coverage in the UK it

[3] Future arrangements for the electricity system operator: its role and structure, Ofgem, January 2017

[4] http://www.dieterhelm.co.uk/regulation/regulation/regulatory-reform-and-the-system-operator-model/

is reasonable to assume that this represents the public interest position and we can see that BT has not delivered on this up to this point in time. Instead, rather than driving innovation it has instead focused on "sweating" its copper assets. Given the set of incentives that BT presently faces including from the remedies imposed under the SMP framework this represents an entirely rational decision.

That BT is able to limit the terms of competition can be seen from the example of the VULA[5] wholesale product. Openreach developed VULA through a consultative process but what emerged at the end of that process was a product that reduced the ability of competitors to innovate in service delivery compared to local loop unbundling (LLU). At the same time, by limiting VULA's functionality Openreach was able to limit the addressable retail customer segment to residential customers, whereas there had been the possibility of designing a product suitable for small and medium size enterprises (SMEs) as well. This meant that, to a significant extent, competition was limited to price.

BT takes responsibility across the system as a whole largely because it operates the only national network, which provides essential wholesale inputs to operators aiming to compete with BT at the retail level. Although BT is regulated through the SMP framework this has not prevented BT from being able unilaterally to set the terms and conditions on which it contracts with other operators. Although the SMP remedies are supposed to constrain BT's market power they do not alter the fact that it remains largely a one-sided relationship. Terms and conditions are not negotiated between equal partners rather they are imposed by BT with Ofcom periodically intervening to address the most egregious offences. The effect of BT's control across the whole system is that advantages to BT accrete, in a similar way to the cumulative materiality noted by Ofcom in the Telecommunications Strategic Review[6], to provide it with significant benefits compared to competing operators.

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5 Virtual Unbundled Local Access (VULA) provides access to BT's Next Generation Access (NGA) network. Rather than providing a physical line, VULA provides a virtual connection that gives communication providers (CPs) a direct link to their customers.

6 Strategic Review of Telecommunications - Phase 2 consultation document, November 2004

The end point of this is that BT has been able to control the evolution of the telecoms sector, latterly specifically by choosing not to invest in FTTH/P but choosing G.fast instead. Below we discuss in more detail why BT has not invested in fibre before considering why other operators have not entered the market on any significant scale to invest in a full fibre network.

### 2.2 BT's financial and regulatory incentives

It must be presumed that BT made the decision to invest in FTTC because it provided it with a better return on its investment than would have been case if it had invested in FTTH/P. Arguably regulation has played a part, when Ofcom has imposed wholesale pricing remedies under the framework they have actually provided BT with the incentive to continue exploiting the copper network assets, as we set out below.

The SMP framework was designed primarily to open up existing networks to facilitate effective retail competition. Historically it has been very successful in this respect, for example LLU transformed the consumer broadband market. However, it is not well suited to facilitating innovation and investment in new networks, either by the incumbent or by new entrants (for reasons that are discussed below). Under the SMP framework it is typically the case that the regulator responds to decisions that have already been made by the SMP designated operator; it regulates what it finds rather than attempting to be involved in the preceding business decisions. However, the general policy positions that a regulator adopts can in practice feed into the business decisions made by the regulated entity.

Ofcom has taken a general policy position that it should set wholesale prices at a level that provide the correct "make or buy" decision to other operators entering a market, as well as arguing that any regulatory remedy imposed must be technology neutral. There is solid economic reasoning to this, as long as there is a reasonable expectation that it is economically viable for the entrant to duplicate the relevant assets. As such, Ofcom's typical approach to setting wholesale prices has been to adopt a form of economic pricing based on current cost accounting (CCA), as a reasonable proxy for long run incremental cost (LRIC) type pricing. The practical effect of this is that,

generally speaking, prices set on that basis are likely to be higher than they would be if assets were valued on a historic cost accounting (HCA) basis. As such it allows BT to "over recover" its real business costs and at the same time incentivises competitive entry. BT thus has a financial incentive to continue to exploit its copper assets, even though there has been no new scale investment in the access market that would justify this level of cost recovery by BT.

One could argue that this formed the backdrop for BT when it was considering the investment cases for FTTC versus FTTH/P. The former involved limited new investment in fibre assets alongside the continued use of a significant proportion of the existing copper assets whereas the latter involved the full replacement of the copper assets with fibre. The regulatory model "signalled" to BT that "sweating" its copper assets would be an acceptable profitable option.

Had Ofcom wished to "signal" to BT that that investment in FTTH/P was in the public interest, it could have changed its policy position on the pricing of its copper assets (and, as will be discussed later, the duct and poles assets). Ultimately when Ofcom assessed the wholesale market that resulted from this investment it refrained from direct price regulation, which had the effect of allowing BT to continue to over recover on its copper assets. BT then made the rational business decision to invest in a technology that allowed it to continue to exploit its copper assets and Ofcom's general policy position supported rather than challenged this decision[7].

### 2.3 Barriers to investment by new operators

Any firm investing in FTTH/P in the UK would enter a market in which BT still has a significant competitive advantage by virtue of its incumbent status. BT not only has in place a nationwide network but also has a critical mass of both wholesale and retail customers and crucially it has control over whether to switch off its copper network thereby being able to forcibly migrate customers onto its new fibre network (by contrast with new entrants having to entice customers onto their network).

[7] It might be argued that Ofcom has taken a technology neutral approach to regulation but, as we can see, rather than being a neutral outcome it has actually favoured copper.

BT already has in place ducts and poles on a broadly nationwide basis, which it could use to deploy fibre. By contrast, in the absence of effective regulation, any new entrant would need to put in its own ducts infrastructure to then be in a position to deploy fibre. This puts it at a significant cost disadvantage and acts as a major barrier to entry. Large-scale investment in fibre by new operators then is only likely if the regulatory environment is able to address these entry barriers.

It has now been recognised by Ofcom that the set of regulations on BT were insufficient and measures are being put in place to improve access to BT's ducts and poles alongside the move to a legally separate Openreach. These measures are very welcome though, as we discuss further below, the Government and/or Ofcom will need to go further to ensure that fibre is deployed nationally within an agreed, acceptable timescale.

An additional factor that has not received as much recognition is the impact on the incentives of new entrants of the deployment of FTTC and the resultant availability of the VULA product. By employing what can be thought of as an interim technology, namely FTTC, BT delayed not only its own potential deployment of full fibre but also the deployment by other entrants. This technology supported broadband speeds that are sufficient for the majority of users today and they can be delivered at a lower cost than full fibre. This would make it very difficult for full fibre operators to compete against operators using VULA, until such point as the speed demands of customers exceed the capabilities of VULA. Perversely then whilst VULA has allowed customers to take higher speed broadband services it has also acted as a further barrier to investment in fibre by new operators. There is a clear "political" advantage to an outcome such as this. Broadband speed is boosted quickly, within the single term often associated with political decision-making, but at a cost in the longer term.

## 3. What needs to be done?

The preceding discussion highlighted a number of reasons for why FTTH/P has not yet been deployed on a large-scale in the UK. We believe the unifying factor, however, is the issue of system control. The SMP framework encourages a "piecemeal" approach to regulation by regulating what can be seen today in narrowly defined markets and across short timescales[8], whereas the challenge posed by system control requires a more holistic, planned approach, without which it is extremely unlikely full fibre will be rolled out across the UK in either a predictable or timely fashion.

The proposed changes from Ofcom on the legal status of Openreach and for BT's ducts and poles product are certainly to be supported. However, we do not believe they go far enough and they do not address the crucial issue of cost recovery by BT for its legacy copper network and the disincentive this gives to BT to invest in FTTH/P (without asking for a subsidy[9]).

If we really are committed to the rollout of fibre across the UK then what is needed is an ambitious national broadband plan[10] that sets out the means to achieve full fibre coverage, with clear milestones and targets. Such an approach is essential because it both removes the de facto control that BT enjoys today and also takes this crucial issue outside of the near-term political decision-making that could otherwise undermine the longer-term public interest and provide investors with an appropriate set of incentives for fibre investment.

One way of achieving full national rollout of fibre is through a three-zone model, which reflects the fact that economic and commercial considerations differ by geographic area and this should be reflected in the supporting regulatory framework. We offer

8 In 2017 Ofcom published three substantive consultations covering broadband: WLA market review, WBA market review and the consultation on broadband USO cost recovery. All three "skirted around" the issue of rural broadband and provided no clear outcomes.

9 https://www.ofcom.org.uk/about-ofcom/latest/media/speeches/2017/competition-britain-fibre-future

10 See for example the French national plan: https://www.francethd.fr/

this model to illustrate what is possible, but we recognise that other approaches could also be viable. The general point here though is that we need to be explicit about our objectives and the means to achieve them; wishful thinking will not get us to where we want to be.

### 3.1 A three-zone model for fibre investment

The Department for DCMS is absolutely correct to emphasise the benefits of competitive supply of fibre, but at the same time we have to respect the underlying economics of fibre network provision. There is likely to be a significant part of the UK that will support competing fibre suppliers. In some areas, however, it is possible that only one operator will be able to operate at scale (the presumption being that it will be BT) and indeed in some areas it is possible that it will not be viable to deploy fibre on a purely commercial basis.

We know that network and demographic characteristics differ by geographic area. At a very simplistic, theoretical level this means that there could be some areas in which more than one operator would be able to operate at or close to the minimum efficient scale (MES), whereas in others it could be the case that only one operator can reach the MES. Precisely how this might work out is an empirical matter, but it is extremely likely that there will be a divide of this form, as Ofcom appeared to recognise in its document "Strengthening Openreach's strategic and operational independence – Proposal for comment"[11]. It is also conceivable that the network and demographic characteristics of some areas (typically deep rural areas) could be such that no operator is able to rollout full fibre on a purely commercial basis. Again this is an empirical matter.

These considerations lead us to propose the three-zone model discussed below. In Zone A, effective competition between rival suppliers of fibre should be possible and it is also likely that there would be a significant overlap with Virgin Media's broadband

11 See for example paragraph 1.4

network[12]. Zone B is likely to be dominated by BT, albeit again there could be some overlap with Virgin Media's network. In this zone effective retail competition would be likely to be dependent on a wholesale product provided by BT. It is possible that there could also be a third zone, Zone C, in which no operator is able to rollout fibre on a purely commercial basis. Should this be the case then public subsidy would be needed to co-fund the investment.

### 3.2 Zone A: Competing fibre suppliers

As Ofcom has recognised, successful fibre rollout over a significant part of the country by multiple operators is likely only to be viable if it can be based on a "fit for purpose" duct and poles product from Openreach. To this end it has proposed many improvements both in the way it can be used by operators and in the processes and systems that will support it. These changes are all very welcome, but we do not believe that they go far enough. There are three important issues that we believe Ofcom should reconsider that could significantly improve the ducts and poles offering from Openreach.

Firstly, it makes no sense from a network deployment perspective for restrictions to be imposed on how an operator is able to use the duct and poles product. Ofcom has put forward a mixed usage rule, which represents a move in the right direction, but it still imposes arbitrary restrictions on the types of customers that can be served and the types of services that can be offered[13]. Similarly, its geographic limitations rule imposes further restrictions on usage.

The fundamental problem is that the SMP framework cuts the broad market up into customer/service/product "silos", which in no way reflects the underlying economics of network deployment. At a very practical level the main implication of this is that it

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12 It is important to note that Virgin Media's network comprises primarily of local access connections over copper and coaxial cables to homes and business premises. FTTH/P is largely reserved for new connections under its Project Lightening program.

13 The mixed usage rule allows ducts and poles to be used to deploy local access networks offering both broadband and non-broadband services, provided the purpose of the network deployment is primarily the delivery of broadband services to homes and businesses, where the inclusion of non-broadband services enables the investment.

undermines the ability of an operator using the product to achieve the full economies of scale and scope that would be available if it were free to deploy fibre in an optimal way. In short it reduces the possibilities for competitive supply of fibre, which could reduce the geographic size of Zone A.

There is a further very practical reason why Ofcom should change its approach and that is because the mixed usage rule gives Openreach the power to reject an application to use ducts and poles if it believes that it breaches the rule. It is entirely inappropriate to hand that power to Openreach and it is inevitable that regardless of the intentions of Openreach it will at a minimum lead to applications being incorrectly rejected, which ultimately will harm retail customers but will also serve to undermine the relationship between Openreach and its own wholesale customers.

Ofcom should consider undertaking a review of what could be thought of as the infrastructure market. It could then move further than it already has and remove any restrictions on use for the ducts and poles product.

Ofcom should also reconsider the pricing of ducts and poles and examine the impact of changing the basis for valuing capital assets. As discussed earlier, Ofcom's general policy position has been to use economic pricing to provide a neutral make-or-buy decision. This makes sense if the assets in question are genuinely open to replication, but that is not the case for the ducts and poles networks. Certainly some operators have had to put in their own ducts to deploy cables, which is unsurprising given the ineffectiveness of the existing ducts and poles product, but with a "fit for purpose" equivalently supplied ducts and poles product it would be more cost effective to use this than to duplicate those assets. Ofcom should undertake a study into revaluing the non-replicable assets using an accounting (i.e. historical cost accounting) rather than an economic (i.e. LRIC/CCA) basis. Moving to an accounting rather than an economic cost approach could reduce prices and at the same time ensure that BT recovers its real business costs rather than the regulated economic costs.

In its Telecommunications Strategic Review Ofcom was clear that to address concerns about discrimination it was necessary to move to equivalence of inputs but also to support this with functional separation[14]. Ofcom was quite correct in its analysis and should apply the same thinking to ducts and poles access. When BT decides to deploy FTTH/P it will be undertaken within Openreach and Openreach will be responsible for providing a wholesale product to be used by BT's downstream business units and other external wholesale customers. In that case Openreach would be "contracting" with itself to use the ducts and poles to deploy the fibre. This means it will have conflicting interests and these should be recognised and addressed by Ofcom.

At a minimum BT should be required to set up a separate business unit within Openreach that is focused only on ducts and poles (and associated necessary facilities) and has in place the necessary safeguards and incentives to ensure that it treats all customers (including itself and the rest of BT) on an equivalent basis.

Alongside these changes to ducts and poles it is essential to have a market environment that incentivises investment and allows competition to flourish. In a normal competitive market operators take on investment risk but are able to set prices freely. Customers choose between rival suppliers and this ensures competitive pricing, as well as determining whether any particular operator earns an acceptable return on its investment. If the Government and Ofcom are serious about wanting to have competing fibre suppliers in as much of the UK as possible then they need to signal that they see this as the desired end point for Zone A when it will be possible to remove regulation from the market. There will, however, need to be a transitional period of regulation for competition to be able to emerge in the face of BT's market strength in the existing wholesale broadband market.

BT will enjoy a unique starting position in the fibre market in that it has an existing base of wholesale broadband customers that it can forcibly migrate to its fibre network when it turns off its copper network. This means that it will be the only

[14] Final statements on the Strategic Review of Telecommunications, and undertakings in lieu of a reference under the Enterprise Act 2002, September 2005.

operator able to guarantee scale operation without needing to compete for customers on an individual basis. As BT will have SMP in this market, at least during the transition period, it will be essential to impose proportionate remedies on it. The main requirement should be an obligation to supply a wholesale product on an equivalent basis, to ensure that new entrants do not get locked-out of the market as they rollout their fibre networks[15]. If BT were to turn off its copper network before competing suppliers had achieved rollout in a specific area then operators using a current generation wholesale product could be forcibly ejected from the market to the obvious detriment of retail customers. Requiring BT to offer a wholesale fibre product during this transition period should ensure continuity of supply.

There is a danger, however, that BT could price this product at a level that would damage competition by imposing a margin squeeze, as recognised by Ofcom with VULA regulation. In this market, as competition develops it should act as a constraint on BT's pricing but it will take time to establish. Ofcom should, therefore, consider imposing an ex ante margin squeeze test obligation[16] that would allow Ofcom to restrain BT's wholesale pricing indirectly. It is important to emphasise that these are transitional measures to facilitate the deployment of competing fibre networks and the end point should be a market free of regulation.

We must recognise that the investment timeframe for fibre does not align with the three-year cycles for SMP reviews. Ideally Ofcom should have a longer market review period of perhaps six years[17]. If Ofcom did not believe it was able to do this then it could achieve much the same end by imposing the regulations for one three year cycle but also setting out firm "trigger" conditions that would have to be met for any of the regulations to be amended or removed. That way, in the absence of the conditions

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15 For the avoidance of doubt BT's VULA product and any variant of it should continue to be regulated as now until the copper network is switched off.

16 Ofcom could consider imposing a "suspended" margin squeeze obligation that would be triggered should BT breach certain parameters set out by Ofcom. In this way it would "sit in the background" to influence BT's pricing.

17 It is interesting to note that the proposed European Electronic Communications Code allows for a five year market review period.

being met the regulations would rollover automatically into the second three-year market review period, providing certainty to investors.

The prospect of facing effective competition from fibre providers should provide BT with a strong incentive to invest in fibre itself. However, Ofcom could ensure that BT faces the correct investment incentives by indicating that in future it intends to review the basis on which it values BT's copper network assets for setting wholesale prices. It would also need to indicate that the VULA product could in future be price regulated on that basis. In these circumstances there should be an improvement in the business case for FTTH/P relative to continuing to upgrade the existing network incrementally.

We believe the changes to the ducts and poles product discussed above alongside a transitional period of regulation could significantly improve the prospect of achieving competing fibre suppliers in a larger part of the UK market.

This does, however, leave a serious challenge and that is to demarcate Zone A in some way. We believe this should be possible through a combined approach of Ofcom commissioning an in-depth study of the cost characteristics of supplying fibre across the UK and potential entrants being required to reveal their intended fibre network rollout being backed-up by some form of credible commitments (for example detailed business plans and proof of investment funds). Lessons could be learned from the earlier LLU process in the UK, where operators were required to reveal their intentions for investment at different BT exchanges. Although this would be a very complex exercise we do not believe the problem would be insurmountable and our suggested approach is merely a first attempt to illustrate one such way that it could be addressed.

### 3.3 Zone B: BT as the dominant commercial fibre supplier

As suggested above it is likely that there will be areas of the UK in which competitive supply of fibre will not be possible and only one supplier will be commercially viable. It is reasonable to presume that under appropriate incentives this would be BT. In

these areas, for competition to be viable at the retail level it would necessarily be based on the use of a wholesale product supplied by BT.

The lack of effective competition as a form of market discipline would mean that regulation would have to be imposed under the SMP framework. The key challenges though would be to give BT the right mix of incentives to deploy FTTH/P rather than continue to invest in incremental technologies such as G.fast that exploit its existing copper network assets.

As noted above, the starting point should be for Ofcom to give BT the correct investment incentives by indicating that in future it intends to review the basis on which it values BT's copper network assets for setting wholesale prices, with the implications this could have for VULA (and any new variants) pricing. Ofcom should also give consideration to whether it could impose some form of public interest investment duty on the legally separated Openreach. This would not require Openreach to interpret the public interest but to give due consideration to it on the basis of guidance from the Government or Ofcom.

It would be important to achieve a balance between some market freedom and some regulatory restrictions. As suggested above BT would be required to provide the wholesale fibre product on an equivalent basis so that operators could compete at the retail level thus ensuring customers would have a choice of suppliers, but it could be given some pricing freedom for the wholesale fibre product.

However, there would be a risk that granting BT complete pricing freedom for its wholesale product could result in BT pricing excessively at the wholesale level, restricting the supply of the product to earn monopoly type profits. Some further obligations on BT could mitigate this risk. Ofcom should require BT to make rollout and copper switch off commitments that could be enforced through financial penalties. This would remove BT's ability to restrict supply, as it would be obliged to supply all relevant homes and premises on a fibre basis. Forced switch off of the copper network would raise a concern about customers being forced onto a

potentially higher price fibre product, so BT would need to have an additional obligation to provide a copper-equivalent product (both in terms of price and performance) over its new fibre network so that customers could effectively stay on their old broadband product (albeit now delivered over fibre)[18].

These rollout/switch-off obligations should ensure that all retail customers within a particular geographic area are able to get a fibre-based broadband product at a broadly competitive price. They do not, however, protect against the possibility of a margin squeeze. As noted earlier, Ofcom recognised this risk and imposed a margin squeeze obligation on BT to guard against it.

Taken together these obligations could provide BT with a strong incentive both to deploy its fibre without unacceptable delays and also to price its wholesale product at a level that would allow retail pricing to be sufficiently attractive to retail customers (of any downstream operator). Any retail customer not being attracted onto a genuine retail fibre product would be taking service on the copper-equivalent wholesale product, which would be provided by BT at a lower margin. The only way that it could manage the migration of these customers onto a true fibre retail product would be through competitive pricing of the wholesale product.

The starting point for demarcating Zone B would simply be that it would be the rest of the country that is not in Zone A. The challenge then would be to determine whether in practice some parts of Zone B could not be supplied commercially and hence would form a third separate zone.

### 3.4 Zone C: Subsidised provision of fibre - ensuring the best deal

Past experience suggests that there could be parts of the UK in which it would not be viable to provide fibre on a purely commercial basis, in which case some form of subsidy would be required to ensure national coverage of fibre. However, we should

[18] This could also be a problem in Zone A and hence a similar obligation on BT could be necessary.

start from the presumption that all customers could be supplied commercially and then we would need an incentive for BT to reveal accurately the extent of Zone C.

What could give BT the incentive to provide accurate information on uneconomic areas? Firstly, there would need to be a competitive bidding process for any public subsidy[19]. BT would know that if it failed to win the bidding process it would effectively be excluded from network provision in that area, thus preventing it from having a truly national network. Secondly, the operator receiving the subsidy should be limited to providing a wholesale service and be prevented from operating at the retail level. This would eliminate any discrimination problems. This would effectively mean that to receive the public subsidy BT would need to decide whether it wanted to retain its national network coverage or its national retail coverage. Thirdly consideration could be given to imposing some form of public service obligation on the operator receiving the subsidy and/or whether the operator could be required to operate as a Community Interest Company (or some other alternative form of social enterprise) in order to ensure that the subsidy was not used to subsidise a commercial profit.

A process such as this would provide BT with a strong incentive to reveal accurately the areas in which it could not provide a commercial service. Indeed it could actually go further and lead BT to choose to deploy fibre even if it were not directly financially beneficial to do so, in order to maintain a national network with the marketing benefits that would result. If public subsidies were required this type of process would ensure that they were minimised and that maximum value for money would be achieved.

### 3.5 A national plan for fibre

The three-zone model that we have outlined above provides a possible basis for delivering fibre nationwide, but for it to function effectively, as already highlighted, it

[19] As suggested at the beginning of this document it is possible that for some geographic areas or specific premises, fibre may not represent the best technology for delivering the broadband speed required. In these cases mobile, for example, may provide a more effective technological solution.

would need to be embedded in something like a national plan for fibre. It is also important to stress that the model must be a coherent whole; it should not be a "pick and mix" approach. Responsibility for this plan would need to sit in an independent body, such as Ofcom or a unit within the Department for DCMS. Effectively this body would be taking on the System Operator role, albeit it would use incentives and regulations on operators to control the system and thus deliver the plan. The plan would ensure that clear objectives, deliverables and milestones were set out so that we would be able to monitor progress and ensure that national fibre coverage is achieved within an acceptable timeframe.

For example, for Zone A, the plan would set a fixed period for determining the geographical extent of the zone at which point it would be possible to set out the extent of the UK that could have competing fibre suppliers (for example, 40 per cent of premises). It would also provide a commitment on the time period (for example six years) that would be allowed for effective competition to emerge and also provide guidance on what would constitute effective competition, perhaps drawing on experience from LLU.

For Zone B it would cover the plans and timetable for rollout/switch-off agreed with BT by geographical area. It would be then be possible to include a firm commitment on achieving full coverage of this part of the UK within a specified timeframe.

For Zone C the plan would set a fixed period for BT to reveal the extent (if any) of the UK for which commercial rollout of fibre is not viable. It would also set out the terms of the bidding process, including a clear timetable, and the required operational basis for any supplier receiving a subsidy.

The independent body would work with the industry and particularly BT to agree the timeframes for delivery of fibre and then would use the types of incentives and regulation outlined in our three-zone model to ensure that they were met. It would articulate a clear vision of what constitutes a good outcome for customers, particularly in terms of speeds.

Up to now BT has been the de facto System Operator and this cannot continue in the future if the Government is serious about delivering fibre across the whole country. Control must be taken back from BT and vested in an independent body that is able to ensure an open and transparent debate.